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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/472,105	12/27/1999	RAY J. THORNBOROUGH	140315.92289	8317

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EXAMINER

MARTIR, LILYBETT

ART UNIT	PAPER NUMBER
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2855

DATE MAILED: 12/19/2001

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/472,105

Applicant(s)

THORNBOROUGH, RAY J.

Examiner

Lilybett Martir

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED 2nd ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boden et al. (Pat. 4,398,773) in view of Kurihara et al. (Pat. 5,707,753). Boden teaches the claimed invention, including:

- A rotor as in element 2 having an axis of rotation and having a plurality of magnetic elements spaced around it's axis and rotatable and movable along a path of travel as in elements 4 and 4'; a sensor as in element 21 disposed adjacent said rotor for carrying magnetically produced electrical pulses; two magnets as in elements 3 and 3' disposed adjacent to said sensor to produce magnetic fields of opposite polarity along the path of travel for the plurality of magnetic elements 4 and 4', as in claim 1.
- Magnetic elements as in elements 4 and 4' that are equally and angularly spaced around the axis of rotation, as in claim 5.
- Two magnets as in elements 3 and 3' that are stationary as in Figure 4, as in claim 6.
- Two magnets that are positioned diametrically across the rotor as in elements 3 and 3' in Figure 4, as in claims 7-8.

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- The sensor including a coil of wire encircling the rotor as in element 21 in Figure 4, as in claim 9.
- A carrier as in element 21 encircling the rotor on which the coil of wire 22 is carried, as in claim 10.
- Two magnets 3 and 3' that are permanent magnets (Col. 5, line 20), as in claim 11.
- The rotor 2 of the pulse transducer being coupled to a magnetic pickup as in element 21 for responding to a rotation of a corresponding magnetic driver 4, as in claim 14.

But he does not disclose:

- Magnetic elements that are magnetically switchable, and two electrical pulses in the sensor produced for each revolution, as in claims 1 and 3.
- Five magnetically switchable elements, wherein ten electrical pulses are produced by one revolution of the rotor, as in claim 2.
- Each magnetically switchable element in the rotor having a core which is magnetically switchable between two polarity states and a shell which surrounds the core and is magnetically switchable between two polarity states to provide four magnetic states for each magnetically switchable element, as in claim 4.

Kurihara et al. teaches a pulse generating element 11 formed of a switchable magnetic wire as in element 11b.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the magnetic assembly for a rotor of Boden et al. using the teachings of Kurihara et al. by providing switchable magnetic elements in place of magnetic elements that are not switchable for the purpose of increasing the efficiency of the magnetic device. It would also have been obvious to one of ordinary skill in the art to produce a specific amount of pulses for rotation such as ten pulses for rotation for the purpose of increasing the reliability of the pulse counting system decimal pulse count systems, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boden et al. (Pat. 4,398,773) in view of Kurihara et al. (Pat. 5,707,753) as applied to claim 1 above, and further in view of Sekido (Pat. 4,676,662). Boden et al. as modified discloses the claimed invention, but he does not teach:

- The rotor being coupled to a dial hand that rotates around a dial face having decimal numbers, as in claim 12.

Sekido teaches a conventional clock that has a dial hand as in elements 1 and 2, that rotates around a dial face as in element 3 that has decimal numbers.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the teachings of Sekido in the pulse generator of Boden et al. as modified for the purpose of providing said pulse generator with a

readable display as a dial hand located in a dial face that physically shows the values of the amount of volume that is being measured.

Claim 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boden et al. (Pat. 4,398,773) in view of Kurihara et al. (Pat. 5,707,753) as applied to claim 1 above, and further in view of Evans et al. (Pat. 4,200,785). Boden et al. as modified discloses the claimed invention, but he does not teach:

- The rotor is coupled to a plurality of odometer number wheel through a drive mechanism, as in claim 13.
- The rotor is coupled through a gearing arrangement to the magnetic pickup for response to a flow meter, and wherein said gearing arrangement also couples said magnetic pickup to an odometer in a meter register, as in claim 15.

Evans et al. teaches a pulse generator wherein a rotor is coupled to a plurality of odometer number wheel through a drive mechanism (Col. 4, lines 38-41) and that is coupled through a gearing arrangement to the magnetic pickup for responding to the rotation of a corresponding magnetic driver in a flow meter (Col. 4, lines 41-43), as can be noted in Fig. 2 and 3.

Response to Arguments

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Citation of Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art considered pertinent during examination of the examined application is:

- Dunbar (Pat. 5,372,048) Floating type turbine flow meter.
- Potter (Pat. 3,238,776) Turbine flowmeter
- Clack et al. (Pat. 5,876,610) Method and apparatus for monitoring liquid flow through an enclosed stream.
- Boyd (Pat. 3,623,835) Gas flowmeter.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (703)305-6900. The examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Fuller can be reached on (703)308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3432 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LM

Lilybett Martir
Examiner
Art Unit 2855

RCM

December 16, 2001

[Handwritten signature]